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- GBA 2093436**

- GB 1544630**

- GB 1439739**

- GB 1351251**

- GB 1030815**

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- EPA 0038267

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- ## A4X

- B5A**

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- (54) Plastics foam product**

- (57) A plastics foam product, e.g. for use in flower arranging, comprises a body 10, made from a low density hydrophilic-rigid plastics foam and a water-impermeable retainer 21, made of a reacting closed cell plastics foam, integrally formed therewith so that when the body 10 has been moistened the retainer 21 is effective

to maintain the integrity of the body. The retainer 21 may extend up the sides of the body 10 to prevent the escape of moisture from the undersurface of the body 10. The product is made by positioning said body 10 in a mould shaped to provide a free space 16 around the underside of the body and introducing into and reacting in the free space the constituents of the closed cell plastics foam.

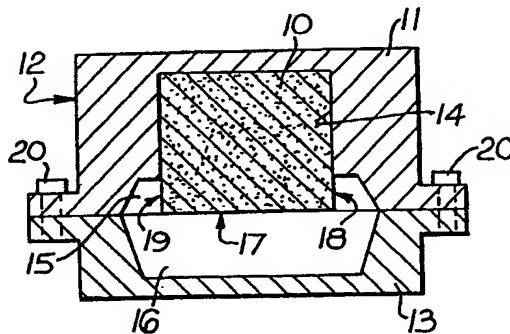
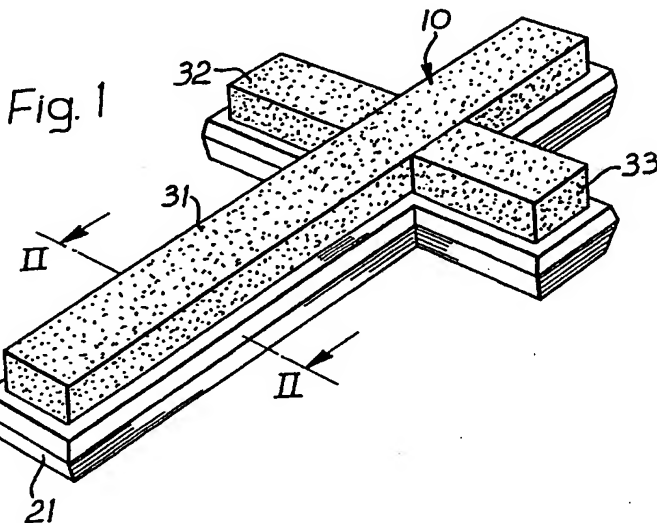


Fig. 3

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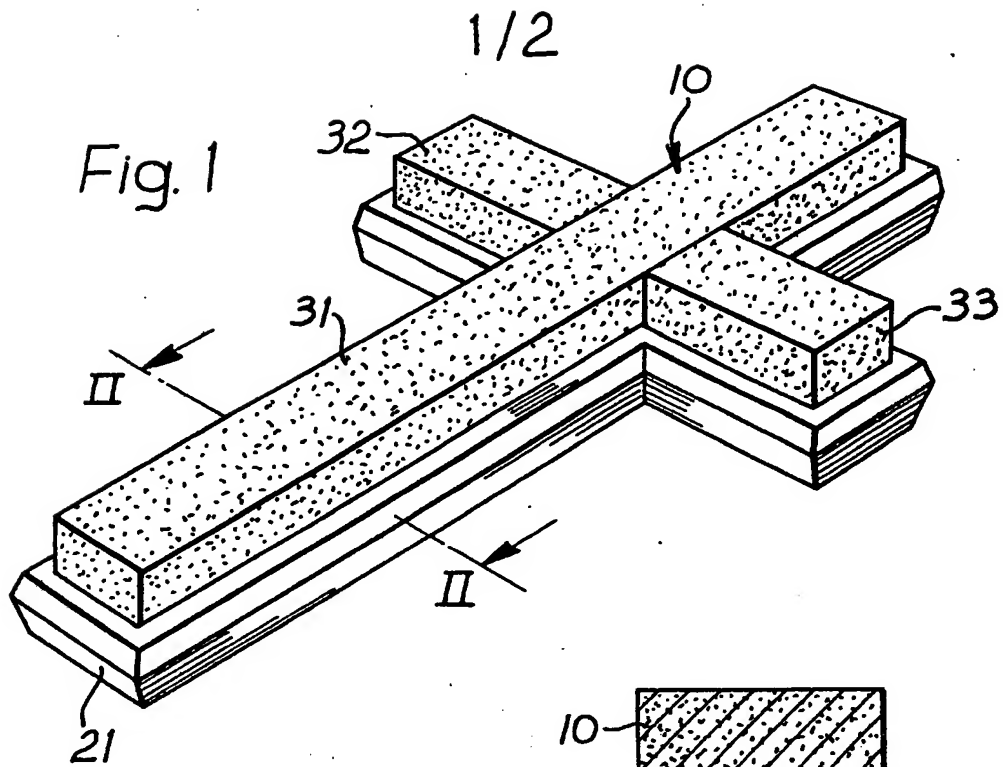


Fig. 2

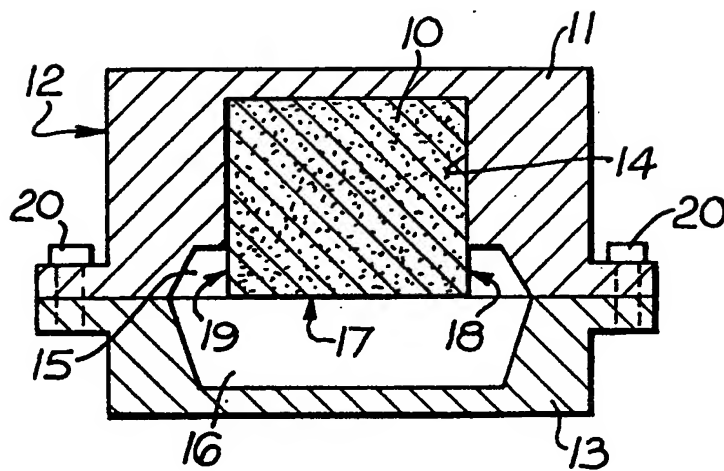
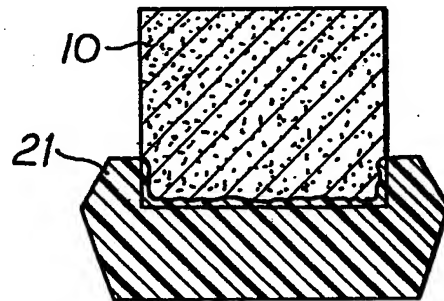


Fig. 3

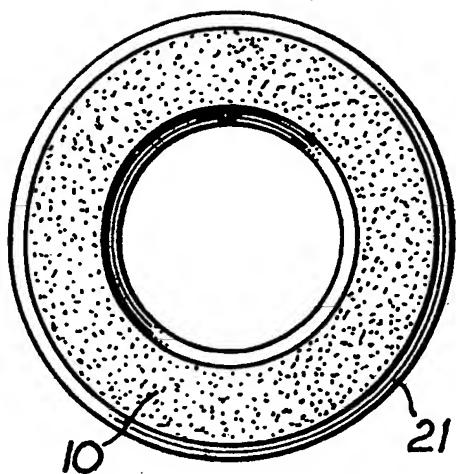


Fig. 4

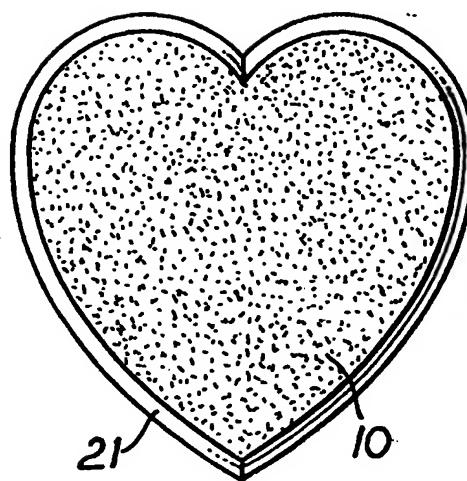


Fig. 5

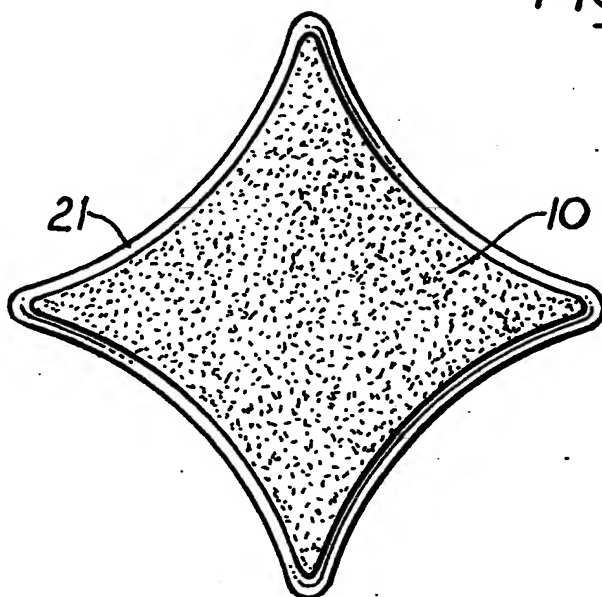


Fig. 6

# **SPECIFICATION** **Plastics foam product**

This invention concerns a plastics foam product.

5 Low-density rigid plastics foams, e.g. a phenolic foam, are already known and used for various purposes wherein the capacity for the foam to retain water is important, for instance in the form of so-called "floral foams". In relation to the  
10 preparation of flower arrangements, for instance wreaths, sprays and the like, floral foams have the particular advantage over hitherto used moss-covered frames that flower and plant stems can simply be planted straight into the moistened  
15 foam which then retains the stems and ensures they remain moist. Accordingly, the use of floral foams reduces considerably the manual work involved in creating floral arrangements such as wreaths.

20 One of the disadvantages of using hydrophilic or floral foams, however, arises from the fact that they are very fragile and can easily be broken or caused to crumble, especially when impregnated with water, the weight of which can easily be a  
25 multiple of the weight of the foam. To counteract this, it has been usual, hitherto, after having cut the foam into a body of the desired shape, to glue the foam body into a tray-like plastics retainer of corresponding shape. These plastics retainers are  
30 usually made, for example, by injection moulding. It is also possible to glue the foam body to a pre-cut dry foam base, however this product is generally weaker and of poorer appearance than that using a tray-like plastics retainer. Accordingly,  
35 as hitherto proposed and used, especially in relation to floral arrangements, hydrophilic foams have involved considerable expense in materials and/or labour.

An object of the present invention is to provide  
40 a plastics foam product, including a hydrophilic component as above discussed, which has the advantage that it involves considerably fewer operations (and consequently considerably less labour cost) in its production.

45 Pursuant hereto, the present invention provides a plastics foam product including a body of hydrophilic rigid plastics foam characterised in that said body has integrally formed therewith a retainer effective, when said body has been  
50 moistened, to maintain the integrity of the body, the retainer comprising a moulded-in covering, of closed-cell reacted foam, e.g. a polyurethane foam, on the underside of the body.

The moulded-in covering may, if desired, be  
55 shaped to extend up the sides of the body so that it will be effective to prevent escape of moisture from the body.

It will readily be understood that as used herein the term "underside", in relation to the body,  
60 means that side or surface of the body which is intended to be lowermost or downwardly-directed when the product is in use.

The invention further provides a method of making a plastics foam product including a body

65 of hydrophilic rigid plastics foam which comprises positioning said body within a mould shaped to provide a free space to which the underside, or parts of the underside, of the body are exposed, and introducing into and reacting in the free space  
70 the constituents of a closed-cell reacting foam, such as a polyurethane foam, so as to form a retainer in the form of an integral moulded-on covering of reacted foam on the underside of the body.

75 The free space is preferably shaped so that the moulded-on covering extends up the sides of the body.

The body may be of any suitable or desired shape. For instance it may be in the form of a  
80 square, rectangular or circular slab in which case the retainer may be flat or may have a tray-like configuration corresponding in plan to the plan shape of the body. Of course, the body can be of any other desired shape. For instance it could be  
85 polygonal, heart-shaped, cross-shaped, elliptical or the like, in plan with the retainer correspondingly shaped. If the body is annular or ring shaped, the retainer will correspondingly shaped, preferably being of channel-like  
90 configuration in radial cross-section.

Practical tests show that in the product produced in accordance with the method of the invention there is a deep and substantial penetration of the reacted foam into the  
95 hydrophilic foam body with the result that the two components of the product are firmly and inseparably united. Such penetration may, for instance, be as much as 2 millimetres.

An important advantage of using a foam base  
100 over the use of a tray-like plastics retainer is the ability of the foam base to allow decorative ribbons etc to be stapled or pinned to it, or if heavy blooms or foliage are used these can be secured by means of wires inserted through the  
105 floral foam and into the stronger base.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view illustrating a  
110 practical embodiment of the plastics foam product of the invention;

Fig. 2 is a cross-section taken on the line II—II of Fig. 1;

Fig. 3 is a cross-section through a mould,  
115 illustrating a preliminary stage in carrying out the method of the invention, to produce the product of Figs. 1 and 2; and

Figs. 4, 5 and 6 are plan views illustrating examples of various alternative configurations for  
120 the foam product of the invention.

In the various flanges of the drawings, like parts have been allocated similar reference numerals.

A practical embodiment of the plastics foam product of the invention which is illustrated in  
125 Fig. 1 has a body 10 formed from three rectangular pieces 31, 32, 33, made of low density hydrophilic rigid plastics foam, and a water-impermeable retainer 21, made of a closed cell plastics foam (e.g. polyurethane). The retainer

21 extends part way up the sides of the body 10, as can be seen in Fig. 2, thereby preventing escape of moisture from the underside of the body 10. Experiments show that in practice the

5 polyurethane foam penetrates a considerable distance into the hydrophilic foam body 10, with the result that in the eventual composite product the one foam is substantially inseparable from the other, other than by breaking up the body 10.

10 Referring to Fig. 3, in carrying out the method of the invention, to prepare a cross-shaped foam plastics product conforming to the invention, one starts with the body 10, made by conventional techniques, e.g. by cutting from a moulded slab, of

15 3 rectangular pieces 31, 32, 33, to form upright and arm sections of a cross each being square in cross-section. This body 10, is capable of absorbing and retaining a relatively high volume of water and although it is rigid and maintains its

20 shape, it is easily penetrated. Thus, if stabbed with a stiff stem (not shown) of a flower or plant, such stem will quite easily penetrate the phenolic foam which is often known by the designation "floral foam".

25 As a first step in carrying the method into effect, the body is fitted into upper part 11 of a two-part cross-shaped mould which is indicated by the reference numeral 12 and which has a lower part 13 complementary to the upper

30 part 11. It will be seen from Fig. 3 that the upper part 11 of the mould 12 is formed with a cavity 14 into which the body 10 is a snug friction fit, which cavity 14 opens to a step 15. In the assembled condition of the mould 12, the step 15 faces a

35 channel-shaped recess 16 in the lower part 13, so that the step 15 and the recess 16 together define an open space facing the underside 17 and parts of the sides 18, 19 of the body 10.

Prior to closing the mould 12, with the body 10 in position, the ingredients of the reacting closed-cell plastics foam (e.g. polyurethane) are filled into

40 the recess 16. The mould is then closed and the parts 11 and 13 held together by suitable fasteners which are shown in the drawing as being studs 20 but may be any suitable securing means, such as quick-action clips or catches. This reacting

45 foam is, then, permitted to expand to occupy the free mould space, and to penetrate the exposed surfaces of the body 10, thereby forming the

50 water-impermeable retainer 21 on the undersurface of the body 10, which retainer extends up the sides of the body 10, as can be seen in Fig. 2.

The resultant product, as soon as the foam has set and the product removed from the mould 12, can be used straight away in the preparation of a wreath or a flower arrangement.

The primary function of the retainer 21 is to maintain the integrity of the body 10, even though it may be very fragile and such fragility may be

60 intensified by the presence in the body 10 of a substantial volume of absorbed water since the retainer 21 extends up the sides of the body 10, water present in the body 10 is prevented from running away but this is a supplementary

65

advantage and is not essential to the invention since the retainer does not have to be shaped to extend up the sides of the body 10. Of course, the retainer 21 itself provides a very convenient rest

70 portion for the entire product.

It will readily be understood that the production of the product is very much more economical than the prior known arrangements in which the floral foam body and the retainer are separately-

75 prepared and separately handled, and have to be adhered the one to the other before they can be used, e.g. in the preparation of a wreath.

Naturally the body 10 can be of any desired practical shape, as can be seen in Figs. 4, 5 and 6

80 which show the body 10 formed as a ring, a heart and a pillow or cushion respectively. Other shapes (not shown) are also possible such as a square, rectangle, circle, ellipse etc. In each of these cases the retainer moulded thereon, of reacting closed-

85 cell foam, will be effectively in the configuration of a tray whose plan shape corresponds to the plan shape of the body.

The invention is not confined to the precise details of the illustrated method and product

90 which are given by way of example only. If it is desired to mould other necessities, such as non-slip feet, into the retainer, these can be incorporated into the mould prior to the introduction of the reacting ingredients. In relation

95 to the mould, it is of course, possible for the arrangement to be such that the mould is closed prior to introduction of the components of the reacting foam and that these components are introduced into the mould space, by way of

100 appropriate ducts, after mould closure.

## CLAIMS

1. A plastics foam product including a body of hydrophilic rigid plastics foam e.g. a phenolic foam characterised in that said body has integrally

105 formed therewith a retainer effective, when said body has been moistened, to maintain the integrity of the body, the retainer comprising a moulded-on covering, of closed-cell reacted foam, e.g. a polyurethane foam, on the underside of the

110 body.

2. A plastics foam product as claimed in claim 1 wherein the moulded-on covering is shaped to extend up the sides of the body so that it will be effective to prevent escape of moisture from the

115 body.

3. A method of making a plastics foam product including a body of hydrophilic rigid plastics foam which comprises positioning said body within a mould shaped to provide a free space to which the

120 underside, or parts of the underside, of the body are exposed, and introducing into and reacting in the free space the constituents of a closed-cell reacting foam, such as a polyurethane foam, so as to form a retainer in the form of an integral

125 moulded-on covering of reacted foam on the underside of the body.

4. A method of making a plastics foam product as claimed in claim 3 wherein the free space is

shaped so that the moulded-on covering extends up the sides of the body.

5. A plastics foam product substantially as hereinbefore described with reference to and as

5 illustrated in Figs. 1, 2, 4 or 5 or 6 of the accompanying drawings.

6. A method for producing a plastics foam product substantially as hereinbefore described.

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ABSTRACT:

A plastics foam product, e.g. for use in flower arranging, comprises a body 10, made from a low density hydrophilic rigid plastics foam and a water-impermeable retainer 21, made of a reacting closed cell plastics foam, integrally formed therewith so that when the body 10 has been moistened the retainer 21 is effective to maintain the integrity of the body. The retainer 21 may extend up the sides of the body 10 to prevent the escape of moisture from the undersurface of the body 10. The product is made by positioning said body 10 in a mould shaped to provide a free space 16 around the underside of the body and introducing into and reacting in the free space the constituents

of the closed cell plastics foam. <IMAGE>